

"Express Mail" mailing label No. EL 521511241US

Date of Deposit: March 12, 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

LUCY FLEMINGS

(Typed or printed name of person mailing paper or fee)

Lucy Fleming

(Signature of person mailing paper or fee)

PATENT

Atty. Dkt. No. 024938-127

INTERNET BASED MOBILE TERMINAL PROVISIONING

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention relates generally to mobile communications and more particularly a system and method for enabling data services through a mobile terminal.

STATUS OF THE PRIOR ART:

- 5 [0002] With the implementation of data services on wireless networks, there has become a need for manufacturers of mobile devices to include data capability in future mobile terminals. Accordingly, mobile terminals with varying capabilities and form factors are becoming increasingly more available such as Data-Only PCMCIA cards for insertion into host devices and PDA's with integrated data
- 10 modems. Accordingly, initial activation and on-going configuration of these mobile devices will become a concern for mobile communication carriers.

[0003] The Over-The-Air Service Provisioning Standard (OTASP), IS-683, is used by carriers to provision voice mobile terminals. The IS-683 standard relies on a Voice Service Option to initiate user based OTASP sessions and cannot be

used by non-voice mobiles. Specifically, the IS-683 standard requires a customer service representative (CSR) to speak with the mobile user in order to initiate the OTASP session. Such a requirement limits the field of use and cost savings which can be achieved by the carrier. For example, the current implementation of IS-683 is not able to support data only mobile terminals. As previously discussed, in order to initiate a session, the customer must first speak with a CSR in order to activate OTASP sessions. This is not convenient because with the advent and evolution of CDMA networks that support packet data capability has resulted in a plethora of mobile terminals of varying form factors and capabilities (i.e., PCMCIA modem cards, PDA's with integrated modems, etc...). Accordingly, the increasing number of mobile terminals will pose a significant challenge to carriers in controlling activation costs and on-going mobile terminal configuration costs.

[0004] The proposed IOTA standard is able to implement mobile terminal communications without the need to speak with a CSR. However, carriers who have already implemented an IS-683 system will need to replace their existing infrastructure in order to implement data only mobile terminals.

[0005] The present invention addresses the above-mentioned deficiencies in data provisioning of the IS-683 system by providing a method and system whereby the OTASP session can be initiated by a data call. As such, the mobile user can initiate a data session on an existing IS-683 based infrastructure without the need to contact a CSR thereby preserving the investment in existing IS-683 systems and still accommodating mobile terminals of differing capabilities.

SUMMARY OF THE INVENTION

[0006] In accordance with the preferred embodiment of the present invention, there is provided a method for a user to initiate a data only session with a mobile terminal over a wireless network configured with an IS-683 protocol. The method comprises the steps of selecting an appropriate system with the mobile terminal in order to place a call to the wireless network and originating the call with the mobile terminal to the wireless network. Next, a traffic channel is assigned for the call originated with the mobile terminal and the call is routed to a web server of the system. The web server will then collect information of the user from the mobile terminal and initiate the data only session. In this respect, the web server performs the functions of a customer service representative such that a data only session can be automatically initiated without outside assistance to the user.

[0007] Typically, the user will enter an activation code into the mobile terminal prior to originating the call to the wireless network. The activation code is entered into the mobile terminal by the user dialing digits thereon. After the call has been activated, the call may be routed via a PSTN, packet data network, or microbrowser to the web server. The web server in turn will collect user information including the name, address, and billing information of the user in order to initiate the data only session. The web server may be a secure web server such that all communications from the mobile terminal will occur in a secure manner.

[0008] In accordance with the present invention, there is provided a system for a data only session with a mobile terminal over a wireless network configured with the IS-683 protocol. The system comprises a base station configured to

communicate with the mobile terminal. Furthermore, the system includes a router operative to direct the call received by the base station. A web server of the system is configured to receive the call from the router. The web server has application specific software that initiates the data session using the IS-683
5 protocol. Specifically, the application specific software allows the data only session to be initiated without the use of a customer service representative.

[0009] The base station is configured to initiate the call from an activation code entered into the mobile terminal by the user. Additionally, the base station can assign a traffic channel to the call. In the preferred embodiment, the router may
10 be a packet data network, a PSTN network, or a microbrowser. The application specific software of the web server is configured to collect information regarding the user in order to initiate the data session.

[0010] In accordance with the present invention, there is provided a computer readable medium containing a program which implements a procedure for
15 initiating a data only session over a wireless network having a web server and configured with an IS-683 protocol. The program of the computer readable medium collects information of the user from the mobile terminal and initiates the data only session over the wireless network via the web server.

BRIEF DESCRIPTION OF THE DRAWING

[0011] These, as well as other features of the present invention, will become apparent upon reference to the drawing wherein:

Figure 1 is a network block diagram of an OTASP architecture
5 utilizing the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0012] Referring now to the drawing wherein the showings are for purposes of illustrating a preferred embodiment of the present invention only, and not for purposes of limiting the same, Figure 1 illustrates an OTASP architecture 10 wherein a user of a mobile terminal does not need to contact a Customer Service Representative (CSR) to initiate a data only session. The user of a data only mobile terminal 12 or voice and data mobile terminal 14 is in communication with the OTASP architecture 10 via a radio tower (i.e., antenna) 18. The user directs the mobile terminal 12 to initiate an OTASP session. Upon initiation, the mobile
15 terminal 12 will perform a system selection for the OTASP architecture 10 as defined in section 3.2.1 of the IS-683 standard. Once the selected system is acquired, the mobile terminal 12 will originate a call using a circuit switched data or packet data service option. Accordingly, the activation code for the session will be the digits dialed using the mobile terminal 12.

20 [0013] After receiving the activation code for the session, a base station (as per section 4.2 of IS-683) and a Mobile Switching Center (MSC) 20 will assign a traffic channel and perform the appropriate call handling procedures. Specifically, the base station may implement the procedures specified in IS-95-B (IS-95, IS-95-A, IS-95-B, CDMA 2000) and IS-707 for handling the call.

[0014] The MSC 20 will route the call to either an Interworking Function (IWF) or Packet Data Service Node (PDSN) 22, as shown in Figure 1. The IWF or PDSN 22 can route the call to three possible locations depending upon the network configuration and the mobile application used to originate the call. The first option
5 is to route the call via a Public Switched Telephone Network (PSTN) 24 to an IT/Web server 26. The second option is to route the call via a Packet Data Network (PDN) 28 to the IT/Web server 26. Finally, the third option is to route the call via a microbrowser 30 to the IT/Web server 26.

[0015] The IT/Web server 26 collects user specific provisioning information through the use of a dedicated application. Specifically, the application on the
10 IT/Web server 26 will collect such provisioning information such as name, address, and credit card (billing) information for the user. Furthermore, the IT/Web server 26 will initiate the IS-683 requirements in order to initiate the mobile data programming session. The dedicated application run by the IT/Web
15 server 26 may be implementation dependent according to the mobile carrier's requirements.

[0016] The mobile session (implemented circuit switched data) shall be maintained for the duration of the programming. The user should be informed via the mobile terminal 12 when the programming is successful. Additionally, the
20 IT/Web server 26 may be a trusted server located inside the mobile carrier's firewall on a protected and secure segment. Accordingly, several security schemes can be deployed which are dependent upon the application. For example, if a web

browser application is utilized, then SSL security can be initiated in order to protect the user's information.

[0017] As seen in Figure 1, the OTASP architecture 10 of the present invention may further include a Wireless Application Protocol (WAP) gateway 32 and a provisioning and billing module 34. Furthermore, in order to place the call, the architecture 10 may include an Over-The-Air Service Provisioning Function (OTAF) 36 and Home Location Register/Authentication Center (HLR/AC) 38 utilizing the ANSI 41/SS7 protocol.

[0018] It will be recognized that by utilizing the IT/Web server 26 to collect user specific information, it is possible for the data session to be initiated without the use of a CSR. Specifically, the user will use his or her mobile terminal 12 to enter personal information which would normally be taken by the CSR. In this respect, the personal information will be transported to the IT/Web server 26 in order to initiate the IS-683 programming. The application running on the IT/Web server 26 will mimic the CSR such that the call can be initiated. Accordingly, existing IS-683 networks can be configured with an IT/Web server 26 in order to initiate data sessions without the need for a CSR.

[0019] Additional modifications and improvements of the present invention may also be apparent to those of ordinary skill in the art. Thus, the particular combination of parts described and illustrated herein is intended to represent only certain embodiments of the present invention, and is not intended to serve as limitations of alternative devices within the spirit and scope of the invention.